

ABSTRACT

A first, a second, and a third combustion region are defined by the air-fuel ratio of the mixture gas feeding combustion. Upon switching of combustion regions from the first combustion region to the third combustion region and from the third combustion region to the first combustion region, namely, when the second combustion region is passed, the mass of NO_x emission downstream of an exhaust purifying device and the torque variation are estimated online. Based on the estimated value of the mass of NO_x emission and the estimated value of the torque variation, the mass of intake air introduced into the combustion chamber is adjusted in a manner different from when normal, such as by changing the amount of lift of the intake valve, for example, so as to reduce the mass of NO_x emission downstream of the exhaust purifying device and the torque variation below predetermined values upon passing of the second combustion region. Thus, the increase in exhaust emissions and the deterioration of operability during the switching of combustion regions can be suppressed.